MINOR NOTICES.

Pflanzenfamilien.[4]—Part 226 contains the completion of the Neckeraceae and the beginning of the Lembophylaceae by V. F. BROTHERUS. The second part of the second supplement has also appeared, including the literature of 1899–1904 in reference to dicotyledons up to the beginning of Euphorbiaceae. —J. M. C.

NOTES FOR STUDENTS.

Archegoniatenstudien.—The tenth of GOEBEL'S series by this title is for size almost a book in itself. It is made up of over twenty papers on morphology and biology of mosses and liverworts, varying from a page or less, embodying a brief note on the water adaptation in the form and position of the leaves in Orthorhynchium, to a paper of forty-odd pages on Dawsonia and its allies, and a like one on marsupiferous Jungermanniales. In great part these papers were written several years ago, and some of the researches have been epitomized in GOEBEL'S *Organographie*, but they have not been published *in extenso* until now, on account of other work.

Together they form a most important contribution to our knowledge of the bryophytes—a contribution too full of details to report fully. At various places it has a tinge of the polemic, for the author has to clear away many errors, and he takes occasion to rebuke one and another for shortcomings. Much space is devoted to speculations, which are confessedly unsupported by investigation because material or time was lacking. Such speculations, if put briefly, may be suggestive as a guide to future investigations; but they appear to be indulged in as a basis for future claims to priority, if we may judge from some citations of earlier ones in these pages. Even a scientific man is rarely without a prejudice in favor of his own hypotheses. Thus the author guessed (*Organographie* 346) about the development of the multicellular "spores" of Dicnemon: "Am wahrscheinlichsten ist es dass sich aus den gekeimten Sporen ein Fadenprotonema bildet, etwa aus den Brutknospen von Tetraphis." Now he declares "dass die früher geäusserte Vermutung richtig war." But the "protonemal filaments" function "der Hauptsache nach als Rhizoiden;" rhizoids arise also from the surface; and the apical cell of the stem arises not as a branch of one of these "protonemal filaments" but almost immediately from a marginal cell of the "spore." It is difficult to see how the earlier guess can possibly be justified by these observations. Certainly the resemblance to the behavior of the gemmae of Tetraphis is rather remote. Other like instances might be cited; sometimes the guess was right, sometimes not; and that is likely to be the case with these new ones. But the observations are abundant, and the author's keen discrimination and clear presentation throw light upon many obscure points.

Dawsonia is held to be the primitive form of the Polytrichum line by reason of the limited differentiation of tissues in the axis of the gametophyte, and espe-

[4] ENGLER, A., und PRANTL, K., Die natürlichen Pflanzenfamilien. Lieferung 226. Leipzig: Wilhelm Engelmann. 1906.